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INDUSTRIAL DEVELOPMENT

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INDUSTRIAL DEVELOPMENT

by

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I - Introduction

1. We shall try a brief analysis, based on our own experience, about the possibilities of setting up a diversified industry, in a country having an economic structure considered under-developed and suffering the impact of inflationary pressures, when such industry is a necessary agent for the correction and suppression of corrupt processes of social and economic stratification.
2. In under-developed areas, the low "per capita" income of thepopulation produces a high propensity to consume and consequently a low level of savings. Thus, the reserves for investments are weakened, and the capitalization index is relatively low.
3. The modest formation of capital, resulting from the large propensity to consume and from the small amount of private savings in under-developed economies, is, in Brazil, aggravated by strong issues of paper-currency, rendering more and more difficult the situation of private enterprises, which are losing ground to public investments in the last years, as can be seen from the statistics of national income (see Annex).
4. The chronic inflation constitutes one of the greatest obstacles to private enterprises, for it creates difficulties to new investment , in view of the uncertain outlook which it produces on future conditions, and makes it impossible for the businessman to accomplish plans which can reasonably be carried out within the budgetary forecasts.
5. Most industries work in a full capacity regime, and, sometimes, with obsolete equipment and technology, due in part to the difficulty of imports, which burdens the production with low productivity, or with high operating costs.
6. Among the classic economists, economic development was a process through which an economy would evolve from a progressive to a stationary condition, in which it would be needed capital replacements and profits would remain constant.
7. By adopting the full-employment thesis, the classic theory admitted that, once the stationary condition was reached, changes could only derive from technological progress.
8. In modern post-Keynesian economic theory, once under-employment is recognized as the normal condition, economic development is defined as the increase of the "per capita" income of a population; for a balanced development, production must grow according to the income elasticity of the economy. The start-up of the movement implies the building of roads and other facilities; there must be coordination among industries producing raw materials, capital goods and consumption goods.
9. The industrialization process planned as an effort for development must rest on strong economic basis. Development is not merely a function of capital expenditures. These will generate future expenses with the use of the capital goods created. Thus, programming of expenditures shall be made simultaneously

with that of production.

10. In general, a policy of industrial development must be based on:

(a). Creation of adequate systems of transportation and generation of electric power, reasonably located, according to the local existence of raw materials and to the proximity of markets.

(b). Improvement, rationality and development of already existent industries, which have real economic possibilities in the region.

(c). Training of skilled technical knowledge and of lower degree manpower, to supply the new industries and also to get better efficiency from traditional industries. The scarcity of qualified labour is a phenomenon similar to the scarcity of capital. When labour is insufficient, it must be used with parsimony, and applied in the bottle-necks of the system. It is necessary to maintain the whole plan within the limits of available manpower, in order to avoid disorder and waste.

(d). Maximum utilization of local raw materials. This initiative will stimulate the exploration of the region, increasing the level of employment through the activity in this primary sector, and will reduce the distances of transportation thus making production cheaper.

(e). Installation of basic industries with high generative characteristics such as petrochemicals and steelmaking. The great importance of these industries is obvious: in a close future, they induce the private enterprises to build correlative and dependent industries. Without the stimulation of the basic industries, the others would never be built.

11. In under-developed economies, infra-structural basic investments introduce higher levels of productivity and create new markets. These investments have a generative power, and this force lies less in the investment itself than in the economic sector into which it is inserted. Besides, a bad choice of sector for an investment application results, as we have seen before, in an unforeseen waste of means, represented by the costs of uneconomic operation of the capital goods created.

12. Since the market exerts the development, only the State is in position to plan and lead the implantation of development. State planning is absolutely essential for a good evolution of the development process, since only through a careful project, prepared with a wide knowledge of all the injunctions and implications of each sector on the others, can economic growth be obtained without high social costs.

13. The extensive Northeastern Region in Brazil, composed of eight states (Piauí, Ceará, Rio Grande do Norte, Paraiba, Pernambuco, Alagoas, Sergipe & Bahia), with 15.7% of the total surface of the country, 31% of its population and 14% of its yearly income, is the greatest problem and challenge for Brazilian Governmental Administration. This serious situation determined a pronounced extent of economic intervention by the Federal Government, to create basic conditions to attract private enterprises, and not only the planning for industrial development but also projects for a necessary agrarian reform are in the hands of the Superintendency for the Development of Northeast (SUDENE).

14. A boom economic growth generally leads to a progressive weakening of agricultural activity, in regard to the rest of economic activities. The proceedings which tend to increase industrial productivity must be followed by others which drive at the increase of demand for industrial goods, and this is not as Say presumed, a direct consequence. We know today that production does not create its own demand, and that demand must proceed from other sectors, especially from the agricultural sector. If capital is applied in industry, and agriculture remains stagnant, the result will be ruinous to the industrial sector itself, in view of the increase of competition within a limited market.

15. Therefore, it is necessary to increase agricultural income in order to create a market for industrial goods.

16. Moreover, it is true that, in countries like Brazil, industrialization depends largely on the development of international trade of agricultural goods, which creates exchange values, vital for imports of equipment, technology and know-how for industry.

17. The start-up of an industrial development process generally forces a recruitment of labour in delayed agricultural sectors, and our experience shows that the productivity obtained in industry by a labour so conscripted is very low. Thus, on one side industrial growth is weakened by the delay of an old agrarian structure, and on the other side the industrial growth weakens agricultural sector, producing an exodus in the fields and making it more difficult to stimulate farmers to increase production. It is a sort of vicious circle, which must be broken somewhere.

18. Uniform economic development requires that agriculture and industry grow together. Obviously this doesn't mean that they must grow at the same rate. The rate of development for each sector will be finally a function of its income elasticity, for a balanced growth.

19. The evolution of Brazilian economic conditions shows a gradual retardation of the agronomical production, with regard to industrial production:

TABLE 1

Indexes of Real and "Per Capita" Products

Years	Real Product			"Per Capita" Product		
	Agriculture	Industry	Total	Agriculture	Industry	Total
1950	103.3	111.8	106.5	100.9	109.2	104.0
1951	104.6	124.0	113.6	99.8	118.3	108.4
1952	112.8	132.4	118.7	105.1	123.4	110.6
1953	112.6	138.4	123.5	102.5	125.9	112.4
1954	122.2	150.0	132.1	108.6	133.3	117.5
1955	129.1	157.6	137.2	112.1	136.9	119.2
1956	127.3	178.4	143.8	108.0	151.3	122.0
1957	140.3	198.8	157.3	116.2	164.7	130.4
1958	141.8	235.1	168.7	114.8	190.4	136.6
1959	151.2	260.6	177.5	119.5	205.9	140.3

20. These indexes are the full demonstration of the progressive delay of agricultural activity in our development process. They make it clear that a big effort must be accomplished in the sector, in order to reconquer the necessary balance, essential to the continuation of industrial development itself.

II - Scale

21. Each type of industry has an "optimum" size, fixed mainly by the market. Of course, if the market is strongly under-supplied, no variation of sales price will occur, with a variation of annual output in the range of contemplated operations. In that case, this particular production would be operating in a typical economic bottleneck, with a big potential market, and the private businessman would be only limited by his investment possibilities. This situation is easily identified in many industrial sectors of under-developed economies, where usually the increase of capitalization is jeopardized by scarcity of investment power and by the uncertainty of budgets, produced by inflation.

22. Of course, when a particular sector is already reasonably supplied, a variation of annual output should be expected, and in such case a market study would be required to indicate the company's share of the total market, at various sales prices.

23. In a fast-growing economy, the extrapolation of a train of data, representing past years, is not always reliable as a method of forecast for future markets. The reason is that under economic conditions suffering a process of expansion, there is a host of exogenous influences which affect the development of markets, making forecasts very complex.

24. In many cases, a potential market is easily identified, making obvious that new investments in the field are destined to be successful.
25. The investigation of markets, and of variation of sales prices with production, when required, is the first big step to fix capacity. The second big step is to calculate investments and cost.
26. The capital investment is divided into two types of capital: the fixed capital, represented by the investments in production, and the working capital, represented by the funds required to conduct business. Of course, investment and cost are functions of installed capacity, but this subject will be discussed later, in paragraphs 40 and 41. In these paragraphs, we must keep our attention directed to the selection of a capacity based upon maximum profitability.
27. The fixed capital estimate is obtained by adding the costs of: purchased equipment, equipment installation, land, buildings, electrical, utilities, engineering, construction and contractor's fee. The working capital would be the sum of raw material inventory, in-process inventory, product inventory, extended credit and available cash.
28. The two mentioned steps have typical characteristics in under-developed ecomies. First, the market investigation must concern all exogenous influences which affect the sector. In Brazil, for instance, if we want to have a forecast of future consumption of liquid fuels, we cannot just extrapolate past data; we must inquire the present aims of recently installed automobile industry, the expansion plans of thermoelectrical power stations, the plans for transformation of steam traction to diesel traction in railways, the expansion projects of merchant marine, etc. Since they are now practically in the beginning of their activities, all these external influences are growing enormously in our country, and their ascendancy over future consumption of fuels is basic. The identification of potencial markets is another imposition in very frequent cases, and it is usually done by confrontation with foreign countries, concerning the development of new markets in regard to "per capita" income of populations, or by a sharp knowledge about the substitution phenomenon in the behaviour of demand.
29. The second big problem for fixing capacities is the investment and cost problem, under an economic conjuncture like ours. Under the existing circumstances, inflation completely subverts all budgets, making the capital surveys unforeseeable.
30. In accordance with official data, indexes of costs in Brazil have been the following, during the last years:

TABLE 2
COST INDEXES
1948 = 100

Year	Construction Materials	Cost of Living	Industrial Products
1944	93	58	83
1945	88	68	90
1946	100	79	101
1947	110	97	99
1948	100	100	100
1949	114	104	105
1950	125	111	109
1951	153	128	129
1952	156	150	139
1953	193	172	160
1954	239	210	211
1955	245	259	240
1956	321	313	298
1957	383	363	349
1958	488	417	408
1959	647	580	587
1960	735	750	724
1961	1052	1000	1031

31. As we see it, inflation is serious in Brazil, and does not encourage private businessmen to assume high financial commitments. Under these conditions, capacities for maximum profitability are not very often attained.
32. We cannot discuss theories on inflation here. The aim of the work is essentially practical. Of course, we could suggest that before an industrial development process is started, reforms should be made in the economic conjuncture of the country, in order to restrain inflation. We could sustain other thesis about many aspects of the problem. But to be objective with regard to the Conference's purposes, and thinking of our own great experience, which is the Northeastern Region, we must point out problems as they appear to us, in practice.
33. We must carry out an industrial development plan, under the detrimental influence of inflation. The demands of developing the capitalization index in Brazilian Northeast Region is undelayable, as it is the only strong way to fight social and economic backwardness, and in a near future it will help extraordinarily to fight the inflation which embarrassed its installation.
34. Market is not a problem, in Brazil. With a vast territory of 3.3 million square miles, and a population of 70 million inhabitants, the low national income leads to a repressed demand avid for new investments. The problem is, therefore, the scarcity of capital. For this reason, honest and generative foreign capital is welcome, and stimulation of national private capital is the great charge of Government.
35. In Brazil, the banking system does not assist yet, as it should, the needs of the economy. It is composed of about 120 principal banks, which cover almost 95% of total financial movement. Beyond this private system of banks, there is the Bank of Brazil, which acts officially as a conventional bank and as a central bank.
36. In order to stimulate generative infra-structural investments, the National Bank of Economical Development was established, in order to manage funds obtained from an additional tax on the income tax, levied on all citizen and artificial persons, and indemnified by federal bonds.
37. The Bank of Northeastern Brazil was founded to take care of that region and applies federal funds as loans to farmers and entrepreneurs established in the area.
38. Briefly, this is the structure of the Brazilian banking system. Inflation produces an enormous expansion of credit, as issues of paper-currency increase bank deposits, and inflation process is much aggravated by this. Since inflation makes money very expensive, large investments to satisfy existent and latent demands may not be possible or economically profitable.
39. Government has, therefore, a great task in stimulating capitalization. Besides all that is done through Federal Banks and local Governments, the Superintendency for the Development of the Northeast (SUDENE) has today, in Brazil, the power to declare which industries can be benefited by a recent decree that authorizes the artificial person, with 100% national capital, a deduction up to 50% of its income tax for application in industries in Northeastern Region; this deduction cannot exceed 50% of the invested amount.
40. Obviously, industrial investments are functions of installed capacities. From a wide series of different observations, it was remarked that, in a first approach, investment varies approximately as the 0.6 power of capacity for that portion of the plant which increases its capacity by employing larger equipment. Investment will vary directly with the capacity for the plant which increases its capacity by using multiple units.

$$\frac{I_1}{I_2} = \left(\frac{C_1}{C_2}\right)^{0.6} \qquad \text{(enlarging equipment)}$$

$$\frac{I_1}{I_2} = \frac{C_1}{C_2} \qquad \text{(multiplying equipment)}$$

41. Therefore, the choice of capacity is dependent upon the availability of investment. After a conservative enquiry of market is made, it may happen that the maximization of profits may not be attained at a maximum capacity, as money becomes more and more expensive with the growth of the investment values, under inflationary economies.

III - Petrochemical Industry

42. It is fundamental that investments made with a direct purpose of developing economically backward areas have highly generative characteristics.

43. In Brazil, there is a big latent market for petrochemicals. It is not very easy to work in an unexplored industrial field; but the great stimulus is the certainty of success, both in its economical and its social results.

44. We have already in the market some petrochmical products, obtained from the steel and from the chemical industry. Thus, there are available supplies of ammonia, ammonia sulfate, benzene, toluene, xylene, styrene, naphthalene, ethylene, butadiene, alcohol, caustic soda, resins, tar, and some others.

45. Modernization of farming and perspectives of a just and unavoidable agrarian reform make probable a rapid increase of fertilizer consumption. A tremendous growth of plastics markets is also certain, and a large potential market of polyester fibers is to be foreseen.

46. Automobile industries caused a big new demand for tyres and increased necessities for synthetic rubber. For the same reason, the use of nylon cords in tyres increased the nylon market.

47. For all these reasons, and many others, development of the petrochemical industry in Brazil is a must and as a basic activity it will have an enormous generative power.

48. Wherever, in any country, for any reasons, Governments have social and economic problems in less developed areas, and a big industrial program of local investments is advisable as a method for increasing "per capita" income and creating new sources of labour, acting through a remarkable multiplier of investments index, it is most advisable to establish the bases for a petrochemical complex.

49. The tremendous growth of the petrochemical industry in the world results from the overall increased demand for chemicals, which cannot be produced in sufficient quantities from other sources. The improvement of refining and cracking techniques due to the necessity of increasing quality and quantity of fuels, increased the quantities of low molecular weight olefines, which are basic raw materials, required by the petrochemical industry.

50. The petrochemical industry has been based primarily on by-product raw materials from the petroleum industry, and its output is growing at a much faster rate than that of refined products.

51. The number of products of this extremely diversified industry is remarkable. The multiplier index of investments in the field is, therefore, very high.

52. In our days, refineries are generally pressed to a run for gasolines with higher and higher octane numbers, as internal combustion engines require fuels with increasing anti-knock characteristics. For automotive gasolines the processes most adopted are the Catalytic Cracking and the Catalytic Reforming units. Both processes, besides producing highly anti-knock compounds, make low molecular weight olefines, as ethylene, propylene, and butylenes, extremely valuable for petrochemical transformations.

53. Catalytic Reforming units usually work in blocked operation, producing high octane gasolines or a blend of aromatic hydrocarbons (benzene, toluene and xylenes). Therefore, the use of aromatics as raw materials to start up a petrochemic industrial complex depends primordially on the existence of a standard refinery, equipped with a Catalytic Reforming unit.

54. The availability of aromatic hydrocarbons would permit the production among others of:

Raw Material		Product
BENZENE	Styrene, phenol, dodecyl-benzene, synthetic fibers, aniline, DDT, maleic-anhydride, benzene-hexachloride, nytro-benzene, etc.	
TOLUENE	Aviation gasoline, motor gasoline, solvents, explosives, plastics, etc	
XYLENE	Solvents, aviation gasoline, phthalic acids, etc.	

55. In Brazil, aromatics imports have been, in Kgs:

TABLE 9

PRODUCT	YEAR 1957	1958	1959
BENZENE	303 564	550 273	478 772
TOLUENE	1 285 887	136 268	778 795
XYLENE	1 832 960	63 106	2 828 227
TOTAL	3 422 411	1 749 647	4 085 794

56. Considering that the value of a raw material is finally a function of the value of its products, we must also estimate indirect imports of aromatics i.e., importation of these hydrocarbons through their imported products; by doing so, we shall have, together with a more conservative estimate of the aromatics market in the country, a clearer idea of the generative force of petrochemical industry.
57. Tables show that markets for aromatics are quite different from the volumes of imports of the pure hydrocarbons. Also, the diversification of imported aromatic products shows large possibilities for the implantation of petrochemical industry, starting from benzene, toluene and xylenes as raw materials.
58. Low molecular weight olefines are easily obtained as by-products of petroleum processing. Thus, ethylene is produced in Catalytic and in Thermal Cracking units. It can be obtained also by dehydration of ethyl alcohol or by hydrogenation of acetylene. Propylene and butylenes are by-products from the cracking of gaseous or liquid hydrocarbons.
59. Chief uses of ethylene:

(a). Chlorination of ethylene produces the dichloroethane, used as an industrial solvent and in the commercial blends of tetra-ethyl lead;

(b). Hydration of ethylene produces the ethyl alcohol;

(c). Oxidation of ethylene produces the ethylene oxide, and intermediate basic compound for ethylene glycol production. Ethylene glycol end-uses are, among others; antifreezes, cellophane, explosives, synthetic fibers, glycol ethers, hydraulic fluids, industrial coolants, etc.;

(d). Polymerization of ethylene produces polyethylene, the most popular among plastics. In the United States, polyethylene consumption exceeds one billion pounds a year;

(e). Alkylation of ethylene with benzene produces the ethylbenzene, and dehydrogenation of ethylbenzene produces styrene, whose chief end-uses are: polystyrene, synthetic rubber, protective coatings, polyester resins, high-impact resins, etc.

60. Chief uses of propylene are:

(a). Chlorination of propylene produces the dichloropropane, used as a solvent. Allyl chloride is another product of propylene chlorination, used as an intermediate compound in production of glycerine and allyl alcohol;

(b). Hydration of propylene produces the isopropyl alcohol, used in acetone manufacture, and as a solvent for oils, gums, shellac and synthetic resins.

(c). Oxidation of propylene produces the ethylene oxide, intermediate compound used in the production of propylene glycol, polyethers and polypropylene glycols.

(d). Polymerization of propylene produces polypropylene which has an outstanding future among propylar plastics.

61. Chief uses of butylenes:

(a). Hydration of normal butylene produces the butyl alcohol secondary, used for making fruit essences, for the manufacture of secondary butyl esters and ketones, or as solvent and thinner in lacquers. Hydration of isobutylene produces

the butyl alcohol tertiary, used in industrial cleaning preparations, in perfumes, and as an extraction and recrystallization solvent;

(b). Dehydrogenation of butylenes produces butadiene, used in synthetic rubber manufacture.

62. Besides the olefines, paraffins can also be used in the petrochemical industry. They can be dehydrogenated to produce olefines, and also several direct uses in organic synthesis.

63. Of course, we have seen only a small fraction of the tremendous possibilities of the petrochemical industry. As the aim of this unpretentious work is to analyse processes for an economic development start-up movement, we have only examined the first stage of this particular industry, as the cited raw materials are directly produced in refineries as by-products. We have tried to show the extraordinary potentialities of the industry to generate new investments, creating wealth and labour in the area.

TABLE 3

IMPORTS OF BENZENE PRODUCTS
1957 to 1959

Product	1957 kg	1958 kg	1959 kg
Nitro Benzene Clorine	138 060	58 000	307 271
Styrene	5 103 494	4 008 453	2 378 377
Dodecyl Benzene	-	377 404	410 069
B H C	1 674 041	254 750	578 047
D D T	1 461 820	1 333 556	196 717
Nitro Benzene	50	-	61
Benzyl Alcohol	12 427	4 758	15 772
Phenylethyl Alcohol	10 166	10 335	10 158
Phenylpropyl Alcohol	32	30	157
Benzoic Aldehyde	6 003	3 928	5 995
Maleic Anhydride	76 334	157 164	92 382
Benzyl Benzoate	8 046	2 715	3 142
Phenyl Salicylate	1 862	710	680
Sodium Benzoate	96 961	64 690	143 296
Benzidine	16 960	5 035	4 020
Phenol	2 041 214	1 717 444	1 868 979
Chlorophenol	117 503	117 921	61 384
Phenothiazine	409 217	70 039	477 108
Phenol Formaldehyde	96 604	37 292	14 093
Nylon	713 046	861 634	278 052
Polystyrene	200	5 729	11 318
Modified Phenolic Resins	-	-	813
Aniline Dyes	1 177 415	1 013 422	1 505 849
Total	13 161 455	10 105 009	8 362 927

T A B L E 4

IMPORTS OF TOLUENE PRODUCTS

1957 to 1959

Product	1957 Kg	1958 Kg	1959 Kg
Benzoic Acid	16 306	29 241	33 280
Toluidine	10 329	15 220	6 073
Total	26 635	44 461	39 439

T A B L E 5

IMPORTS OF XILENES PRODUCTS

1957 to 1959

Product	1957 Kg	1958 Kg	1959 Kg
Phthalic Acid	-	17 345	53 765
Phthalic Anhydride	30 027	23 232	1 020 529
Total	30 027	40 577	1 074 294

TABLE 6

INDIRECT IMPORTATION OF BENZENE

1957 to 1959

Product	Weight % of benzene in the product	Indirectly imported benzene		
		1957	1958	1959
Nitro Benzene Clorine	50 0	68 373	28 724	152 172
Styrene	75 0	3 827 620	3 006 339	1 783 782
Dodecyl Benzene	31 7	—	119 665	130 022
B H C	26 8	448 712	68 283	154 940
D D T	22 0	321 642	293 420	43 283
Nitrobenzene	63 4	32	—	38
Benzyl Alcohol	72 9	9 059	3 468	11 497
Phenylethyl Alcohol	63 9	6 500	6 608	6 494
Phenylpropyl Alcohol	57 4	18	17	90
Benzoic Aldehyde	73 6	4 417	2 890	4 412
Maleic Anhydride	79 5	60 756	125 090	73 528
Benzil Benzoate	73 6	5 921	1 998	2 312
Phenyl Salicylate	78 7	1 467	559	536
Sodium Benzoate	54 1	52 521	35 040	77 619
Benzidine	83 8	14 224	4 223	3 372
Phenol	82 9	1 693 773	1 425 113	1 550 854
Chlorophenol	53 0	62 349	62 570	32 571
Phenothiazine	78 0	319 189	54 630	372 144
Phenol Formaldehyde	75 7	73 156	28 241	10 672
Nylon	36 4	259 986	314 053	101 346
Polystyrene	75 0	150	4 297	8 488
Modified Phenolic Resins	75 7	—	—	616
Aniline Dyes		392 472	337 807	501 950
	Total:	7 622 247	5 923 035	5 022 738

TABLE 7

INDIRECT IMPORTATION OF TOLUENE
1957 to 1959

Product	Weight % of toluene in the product	Indirectly imported Toluene		
		1957	1958	1959
Benzoic Acid	75 4	12 296	22 051	25 096
Benzyl Acetate	61 3	—	—	—
Toluidine	85 9	8 881	13 086	5 222
Total:		21 177	35 137	30 318

TABLE 8

INDIRECT IMPORTATION OF XYLENES
1957 to 1959

Product	Weight % of toluene in the product	Indirectly imported Toluene		
		1957	1958	1959
Phthalic acid	63 8	—	11 076	34 332
Phthalic Anhydride	71 6	21 506	16 639	730 919
Total :		21 506	27 715	765 251

ANNEX
Table 10

BRAZIL

Years	Consumption and Investment — Billions of Cruzeiros — Private Sector — Consumpt. (A)	Invest. (B)	Total (C)	Public Sector — Consumpt. (D)	Invest. (E)	Total (F)	F/C %	F/C Index 1948=100	D/A %	D/A Index 1948=100	E/B %	E/B Index 1948=100	Issues of Paper-currency — In millions of Cr$ — Balance at the end of the year	Annual Variation + or -
1947	125.2	25.1	150.3	16.2	4.0	20.2	13.4	88	12.9	90	15.9	79	20 395	- 94
1948	137.8	25.2	163.0	19.9	5.1	25.0	15.3	100	14.4	100	20.2	100	21 693	+ 1 298
1949	165.1	24.2	189.3	24.6	8.0	32.6	17.2	112	14.9	103	33.1	164	24 042	+ 2 349
1950	194.4	23.2	217.6	29.1	10.1	39.2	18.0	118	15.0	104	43.5	215	31 202	+ 7 160
1951	214.1	48.6	262.7	34.8	10.4	45.2	17.2	112	16.3	113	21.4	106	35 316	+ 7 114
1952	244.8	52.6	297.4	39.9	12.5	52.4	17.6	115	16.3	113	23.8	118	39 280	+ 3 964
1953	320.9	35.8	356.7	57.0	14.3	71.3	20.0	131	17.8	124	39.9	198	47 002	+ 7 722
1954	395.7	62.6	458.3	63.8	19.8	83.6	18.2	119	16.1	112	31.6	156	59 039	+ 12 037
1955	508.8	69.5	578.3	81.3	20.4	101.7	17.6	115	16.0	111	29.4	146	69 340	+ 10 301
1956	649.3	81.4	730.7	114.6	25.1	139.7	19.1	125	17.6	122	30.8	152	80 819	+ 11 479
1957	783.8	84.7	868.5	130.3	39.8	170.1	19.6	128	16.6	115	47.0	233	96 575	+ 15 756
1958	964.1	114.0	1 078.1	151.1	51.6	202.7	18.8	123	15.7	109	45.3	224	119 814	+ 23 239
1959	-	-	-	-	-	-	-	-	-	-	-	-	154 621	+ 34 807

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